Remarks/Arguments

Based on the above amendment and the following remarks, applicants respectfully submit that all the pending claims are in condition for allowance.

Status of the Claims

Claims 1-23 remain pending.

Objections to the Drawing

The drawings lack a uniform font, and Fig. 2 was found to be lacking a proper legend. These issues are addressed in the formal drawings submitted herewith.

Objections to the Specification

The abstract was found to have an extraneous line of information. This line is deleted in the foregoing amendment.

The examiner noted an error in paragraph 0007. This error is corrected in the foregoing amendment.

Rejections under 35 USC § 102

Claims 1, 2, 4, and 6-9 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,754,261 ("Liu"). Claim 11 stands rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,118,758 ("Marchok"). The standard for a rejection under 35 USC 102 is anticipation, which requires that each and every element set forth in the claim be found in the reference. Applicants respectfully traverse these rejections because Liu and Marchok fail to teach every element of the claims.

Independent claim 1 recites in part "a transform module ... configured to determine [frequency component] amplitudes ... and a detection module configured to determine a channel symbol from the [frequency component] amplitudes while accounting for correlation between the amplitudes". The examiner cites Liu's DFT block 833 and time domain equalizer 832 (Fig. 8) and supporting passages in the specification (col. 5, lines 42-57; col. 7, lines 32-36, 63-64; col. 8, lines 1-9, 56-61; col. 10, lines 4-16; col. 24, lines 37-67; and col. 25, lines 43-47) as setting forth these limitations. However, Liu's Fig. 8 contains an evident error that may be somewhat misleading: the arrows associated with Liu's time domain equalizer 832 are reversed. Liu describes his intended operation at col. 7, line 61 to col. 8, line 4. As this portion of Liu makes

clear, the time domain equalizer operates on time-domain samples rather than frequency domain components, and the DFT block 833 operates on the results rather than providing the input.

Liu does not teach determining a channel symbol from frequency component amplitudes while accounting for correlation between the amplitudes. To the contrary, Liu expressly teaches uncorrelated processing: "These frequency samples are processed by the block 834, which performs gain scaling and FEQ on a per-subchannel basis ... to recover the transmitted information bits". Col. 8, lines 4-9. For at least this reason, independent claim 1 and its dependent claims 2, 4 and 6-9 are allowable over Liu.

Independent claim 11 recites in part "determining a channel symbol associated with the set of frequency component amplitudes while accounting for correlation between the amplitudes". The examiner cites col. 4, lines 1-23 of Marchok as teaching these limitations. However, the cited portion of Marchok merely describes a OFDM/DMT modulation scheme in which data is transmitted using multiple constellations in different frequency bins. Elsewhere Marchok advocates a selective decoding strategy in which receivers decode only a subset of the frequency bins. See col. 4, line 62 through col. 5, line 13. Such a decoding strategy is based on frequency bin independence. For at least this reason Marchok fails to teach or suggest a decoding strategy that accounts for correlation between frequency component amplitudes. For at least this reason, claim 11 is allowable over Marchok.

Rejections under 35 USC § 103

Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Liu in view of U.S. Patent No. 6,597,745 ("Dowling"). Claims 12-13, 15-20 and 22 stand rejected as being unpatentable over Marchok in view of Liu. Claim 23 stands rejected as being unpatentable over Marchok and Liu in view of Dowling. The standard for a rejection under 35 USC 103 is prima facie obviousness, which requires, *inter alia*, that the cited reference must teach or suggest all the claim limitations.

Claim 5 depends from claim 1 and therefore includes the limitations previously quoted as being absent from Liu. Dowling similarly fails to teach or suggest "a detection module configured to determine a channel symbol from the [frequency component] amplitudes while accounting for correlation between the amplitudes". To the contrary, Dowling teaches a frequency equalization that treats each frequency bin independently. See col. 7, lines 52-65

(teaching that Λ^{-1} is a diagonal matrix). For at least this reason, claim 5 is allowable over the cited references.

Claims 12-13 and 15-18 depend from claim 11 and therefore include the limitations previously quoted as being absent from Marchok. Liu similarly fails to teach or suggest "determining a channel symbol associated with the set of frequency component amplitudes while accounting for correlation between the amplitudes". As noted previously, Liu expressly teaches uncorrelated processing. For at least this reason, claims 12-13 and 15-18 are allowable over the cited references.

Independent claim 19 recites in part "a transform module ... configured to determine [frequency component] amplitudes ... and a detection module configured to determine a channel symbol from the [frequency component] amplitudes while accounting for correlation between the amplitudes". As noted previously, Marchok fails to teach or suggest a decoding strategy that accounts for correlation between frequency component amplitudes. Liu similarly fails to teach or suggest such a decoding strategy, and indeed, Liu expressly teaches uncorrelated decoding. For at least this reason, independent claim 19 and its dependent claims 20 and 22 are allowable over the cited art.

Claim 23 depends from claim 19 and therefore includes the limitations previously noted as being absent from Marchok and Liu. Dowling similarly fails to teach or suggest "a detection module configured to determine a channel symbol from the [frequency component] amplitudes while accounting for correlation between the amplitudes". To the contrary, Dowling teaches a frequency equalization that treats each frequency bin independently. See col. 7, lines 52-65 (teaching that Λ^{-1} is a diagonal matrix). For at least this reason, claim 23 is allowable over the cited references.

Allowable Subject Matter

Claims 3, 10, 14 and 21 have been allowed, subject to being rewritten in independent form. Applicants wish to defer amending these claims pending the prosecution outcome of the base claims.

Conclusion

In the course of the foregoing discussions, applicant may have at times referred to claim limitations in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other distinctions between the claims and the prior art which have yet to be raised, but which may be raised in the future.

If any fees are inadvertently omitted or if any additional fees are required or have been overpaid, please appropriately charge or credit those fees to Conley Rose, P.C. Deposit Account Number 03-2769/1789-04801/HDJK.

Respectfully submitted,

Daniel J. Krueger
Reg. No. 42,771
Agent for Applicants
Conley Rose, P.C.
P.O. Box 3267
Houston, Texas 77253-3267
Ph: (713) 238-8000